UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,809	07/27/2005	Poopathy Kathirgamanathan	LUC-013	1980

7590 08/18/2010

David Silverstein
Andover-IP-Law
Suite 300
44 Park Street,
Andover, MA 01810

EXAMINER	
WILSON, MICHAEL H	

ART UNIT	PAPER NUMBER
1786	

MAIL DATE	DELIVERY MODE
08/18/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/540,809	KATHIRGAMANATHAN ET AL.	
	Examiner	Art Unit	
	MICHAEL WILSON	1786	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *64-92* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *64-92* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action is in response to Applicant's amendment filed 12 July 2010, which amends claims 64, 65, 68, 75-89 and adds new claims 91 and 92.

Claims 64-91 are pending.

2. Applicants overcame the rejection of claims 65 and 77 are 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention by amending the claims in the reply filed 12 July 2010.

Claim Objections

3. Claims 77 and 88-90 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Regarding claims 77 and 88-90, the claims recite that the dopant is diphenylquinacridine; however diphenylquinacridine is not within the scope of claims 75 or 87. The independent claim, claim 64, recites a fluorescent dopant selected from the group consisting of diphenylacridine, coumarins, perylene, quinolates, porphyrins, porphines, and pyrazalones. While diphenylacridine appears to be a species it is interpreted as a genus because the name diphenylacridine does not tell one of ordinary

skill in the art where the phenyl groups are attached to the acridine core. The genus diphenylacridine is interpreted as an acridine with two phenyl substituents. However diphenylquinacridine does not read on diphenylacridine or any of the other dopants listed in claim 64.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 77-86 and 88-92 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 77-86 and 88-92, the claims include the limitation wherein the fluorescent dopant is "diphenylquinacridine (DPQA)" however this species in not sufficiently described by the specification for one of ordinary skill in the art to determine the identity of this compound. The specification does not give a specific chemical name or a chemical structure for diphenylquinacridine. Quinacridine is an organic group which has multiple positions which could be substituted by phenyl. "Diphenylquinacridine" gives no information as the where the phenyls are attached to a quinacridine core. A search of the prior art including US Patents and US Pre-Grant

Publications (in EAST), a Google search, and Chemical Abstracts Service (STN, CAPLUS database) found only the use of the term diphenylquinacridine by Applicants. The only prior art reference discovered Kathirgamanathan et al. (WO 2004/008554 A1) only used the term once with no further description and defined DPQA as diphenylquinacridone, a different compound. Therefore the dopant diphenylquinacridine is not commonly known in the art and one of ordinary skill in the art would be unable to determine the identity of the compound given the specification and knowledge common to the art.

6. Claims 77-86 and 88-92 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claims 77-86 and 88-92, the claims include the limitation wherein the fluorescent dopant is "diphenylquinacridine (DPQA)" however the specification does not enable one of ordinary skill in the art to make and use the embodiments of the claimed device with this species. The specification does not give a specific chemical name or a chemical structure for diphenylquinacridine. Nor is there any synthesis in the specification which would teach one of ordinary skill in the art how the make claimed diphenylquinacridine dopant.

Quinacridine is an organic group which has multiple positions which could be substituted by phenyl. "Diphenylquinacridine" gives no information as the where the phenyls are attached to a quinacridine core. A search of the prior art including US Patents and US Pre-Grant Publications (in EAST), a Google search, and Chemical Abstracts Service (STN, CAPLUS database) found only the use of the term diphenylquinacridine by Applicants. The only prior art reference discovered, Kathirgamanathan et al. (WO 2004/008554 A1), only used the term once with no further description and defined DPQA as Diphenylquinacridone, a different compound. Therefore the dopant diphenylquinacridine is not commonly known in the art and undue experimentation would be required for one of ordinary skill in the art to make and use the invention of claims 77-86 and 88-92.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 64, 66-69, 73-75 and 87 are rejected under 35 U.S.C. 102(e) as being anticipated by Cok (US 6,565,231 B1).

Regarding claims 64, 66-69, 73-75 and 87, Cok discloses an electroluminescent device and a method of forming the device (column 9, line 60 to column 10, line 9) comprising an anode and cathode with an organic layer between the electrodes (column 6, lines 15-24). The organic layer comprises a light-emitting layer with zirconium quinolate as the host material (column 8, lines 30-50) with a fluorescent dopant (column 8, lines 56-62). The reference discloses the dopant material may be perylene, quinacridone, and coumarin (column 8, lines 56-62). The reference discloses dopants concentrations at can be 0.01 to 10% by weight which overlaps with the presently claimed range (column 8, lines 8-10). A hole transport layer between the anode and the light-emitting layer (column 6, lines 15-25) is disclosed comprising a aromatic amine (column 7) including α-NPD (instant α-NPB) (column 7, line 28) and an electron transport layer between the cathode and the light-emitting layer (column 6, lines 15-25) comprising a metal chelate oxinoid compound (column 8, lines 64-67). The cathode is formed with material selected from lithium, magnesium, magnesium alloys and silver magnesium alloys (column 9, lines 20-43). The anode is formed from ITO glass or plastic (column 6, lines 25-45).

9. Claims 64, 66, 67, 69, 71-75, and 87 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukuyama et al. (JP 2001-043976 A), machine translation relied upon.

Regarding claims 64, 66, 67, 69, 71-75, and 87, Fukuyama et al. discloses an electroluminescent device [0016] and a method of forming the device [0019] comprising

an anode and cathode with an organic layer between the electrodes [0019]. The organic layer comprises a light-emitting layer with zirconium quinolate ([0033] and [0034]). The reference also discloses the light emitting layer may be doped with a fluorescent dopant [0020] including coumarin [0029] and DPVBi [0033]. A dopant concentration of 1 mol% is disclosed for coumarin [0029]. A hole transport layer between the anode and the light-emitting layer is disclosed comprising a aromatic amine [0027] and an electron transport layer between the cathode and the light-emitting layer [0027] containing zirconium quinolate [0027] or aluminum quinolate [0039]. The cathode is formed with material selected from lithium, aluminum, magnesium, magnesium alloys and silver magnesium alloys [0023]. The anode is formed from ITO glass ([0016]-[0017]).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 70-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cok (US 6,565,231 B1) as applied to claim 66 above.

Regarding claims 70-72, Cok discloses all the claim limitations as set forth above. Additionally the reference discloses and an electron transport layer between the cathode and the light-emitting layer (column 6, lines 15-25) comprising a metal chelate oxinoid compound (column 8, lines 64-67). While the reference does not explicitly disclose aluminum, lithium, and zirconium quinolates used in the electron transport layer the use of aluminum, lithium, or zirconium quinolate in the electron transport layer would be obvious to one of ordinary skill in the art at the time of the invention given the teachings of Cok as a whole. The reference specifically teaches metal chelated oxinoid compounds, including chelates of oxine itself as preferred material for the electron transport layer (column 8, lines 63-67). The reference also discloses aluminum, lithium, and zirconium quinolates (oxinoids) as useful host materials for the light-emitting layer (column 8, lines 30-49) and further discloses the material to be electron transporting materials (column 8, lines 1-4). Given that the reference teaches oxinoid compounds in general as preferred for the electron transport layer one of ordinary skill in the art would reasonably expect the specific oxinoid compounds disclosed as electron transporting material for the light-emitting layer to be suitable for the electron transport layer.

13. Claims 68 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyama et al. (JP 2001-043976 A), machine translation relied upon, as applied to claims 66 and 67 above and in view of Kido et al. (US 6,396,209 B1).

Regarding claim 68, Fukuyama et al. disclose all the claim limitations as set forth above. Additionally the reference discloses a hole transport layer between the anode and the light-emitting layer is disclosed comprising a aromatic amine [0027. However the reference does not explicitly disclose wherein the electron transport layer comprises α-NPB.

Kido et al. teach similar organic electroluminescent device (abstract). The reference teaches α-NPB as a hole transport material for the hole transporting layer of a similar organic electroluminescent device (column 9, lines 15-35).

It would be obvious to one of ordinary skill in the art at the time of the invention to use α-NPB in the hole transport layer of Fukuyama et al. given that Kido et al. teach α-NPB, a tetraphenyl benzidine derivative, to be suitable for the hole transport layer while teaches Fukuyama et al. tetraphenyl benzidine derivatives to be suitable for the hole transport layer [0018]. It is well settled that it is *prima facie* obvious to combine two ingredients, each of which is targeted by the prior art to be useful for the same purpose. *In re Lindner* 457 F,2d 506,509, 173 USPQ 356, 359 (CCPA 1972). Also, case law holds that "it is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from

their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

Regarding claim 70, Fukuyama et al. disclose all the claim limitations as set forth above. Additionally the reference discloses a hole transport layer between the anode and the light-emitting layer is disclosed comprising a aromatic amine [0027] and an electron transport layer between the cathode and the light-emitting layer [0027] containing zirconium quinolate [0027] or aluminum quinolate [0039]. However the reference does not explicitly disclose wherein the electron transport layer comprises lithium quinolate (Liq).

Kido et al. teach a similar organic electroluminescent device (abstract). The reference teaches using Liq with Alq in an electron injection layer (column 9, lines 59-65). While the reference calls the layer an electron injection layer, it is disclosed as the only layer between the cathode and the light-emitting layer and must inherently perform the function of an electron transport layer, transporting electrons, in order for the device to operate. Therefore the electron injection layer of Kido et al. can also be considered an electron transport layer. The reference teaches using the Liq in the electron injection layer (instant electron transport layer) reduce the barrier to electron injection from the cathode and ensures a low drive voltage for the device (column 2, lines 49-54).

It would be obvious to one of ordinary skill in the art at the time of the invention to use Liq, as taught by Kido et al., in the electron transport layer of Fukuyama et al. One of ordinary skill would reasonably expect such a combination to be suitable given that Kido et al. teach using Liq in an electron transporting layer with Alq in an organic

electroluminescent device, and Fukuyama et al. teach Alq is suitable for the electron transport layer. One of ordinary skill would be motivated by a desire to reduce the barrier to electron injection from the cathode and ensures a low drive voltage for the device.

14. Claims 65 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cok (US 6,565,231 B1) as applied to claims 64 and 75 above in view of Thompson et al. (US 6,210,814 B1) and Cotton et al. (Advanced Inorganic Chemistry).

Regarding claims 65 and 76, Cok discloses all the claim limitations as set forth above. Additionally the reference discloses metal complexes of 8-hydroxyquinoline in general to be useful host materials (column 8, lines 30-33) and zirconium oxine (tetra(8-quinolinolato)zirconium(IV)) specifically to be a useful host material (column 8, lines 48-49). However the reference does not explicitly disclose hafnium quinolate as a host material.

Thompson et al. teach a similar electroluminescent device (column 4, line 57 to column 5, line 20). The reference teaches nonpolar matrix materials Mq_4 where M is a group 4 metal and q is quinoline (column 21, lines 45-65). The reference teaches zirconium quinolate and teaches Zr and Hf quinolates as equivalent and interchangeable (column 22, lines 22-50). Cotton et al., a widely used text on inorganic chemistry which one of ordinary skill in the art would be familiar with, teaches that zirconium and hafnium chemistries are more nearly identical than for any other two congeneric elements (elements in the same group of the periodic table) (bottom of page

878). This would lead one of ordinary skill in the art to expect complexes of zirconium and hafnium to be equivalent and interchangeable.

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention given the teachings of Thompson et al. and Cotton et al. to replace zirconium quinolate with hafnium quinolate in the device of Cok. One of ordinary skill in the art would reasonably expect such a substitution to be suitable given the specific teachings of Thompson et al. that zirconium and hafnium quinolates are equivalents suitable for use in electroluminescent devices and the generic teachings of Cotton et al. the zirconium and hafnium chemistries are "nearly identical." Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by analogous prior art) is not an act of invention; where equivalency is known to the prior art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

15. Claims 65 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyama et al. (JP 2001-043976 A) as applied to claims 64 and 75 above in view of Thompson et al. (US 6,210,814 B1) and Cotton et al. (Advanced Inorganic Chemistry).

Regarding claims 65 and 76, Fukuyama et al. discloses all the claim limitations as set forth above. Additionally the reference discloses quinolate complexes with tetravalent metals in general to be suitable for the light-emitting layer ([0011]-[0013]) and zirconium quinolate specifically to be suitable for the light-emitting layer [0015].

However the reference does not explicitly disclose hafnium quinolate for use in the light-emitting layer.

Thompson et al. teach a similar electroluminescent device (column 4, line 57 to column 5, line 20). The reference teaches nonpolar matrix materials Mq_4 where M is a group 4 metal and q is quinoline (column 21, lines 45-65). The reference teaches zirconium quinolate and teaches Zr and Hf quinolates as equivalent and interchangeable (column 22, lines 22-50). Cotton et al., a widely used text on inorganic chemistry which one of ordinary skill in the art would be familiar with, teaches that zirconium and hafnium chemistries are more nearly identical than for any other two congeneric elements (elements in the same group of the periodic table) (bottom of page 878). This would lead one of ordinary skill in the art to expect complexes of zirconium and hafnium to be equivalent and interchangeable.

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention given the teachings of Thompson et al. and Cotton et al. to replace zirconium quinolate with hafnium quinolate in the device of Fukuyama et al. One of ordinary skill in the art would reasonably expect such a substitution to be suitable given the specific teachings of Thompson et al. that zirconium and hafnium quinolates are equivalents suitable for use in electroluminescent devices and the generic teachings of Cotton et al. the zirconium and hafnium chemistries are "nearly identical." Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by analogous prior art) is not an act of invention; where equivalency is known to the prior

art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

Response to Arguments

16. Applicant's arguments filed 12 July 2010 have been fully considered but they are not persuasive.

Applicants argue that the heart of the technical problem to which the present application is directed is to find a material that is superior to aluminum quinolate for use as an electroluminescent host material. The difficulty in solving this problem Applicants assert is demonstrated by the long period of time over which aluminum quinolate has remained the predominant material for such applications. In relation to a two-component electroluminescent layer Applicants assert that Cok (US 6,565,231 B1) and Fukuyama et al. (JP 2001-043976 A) give no guidance or suggestion whatsoever as to what might be a generally better host material than aluminum quinolate. However both Cok and Fukuyama et al. teach a two-component electroluminescent layer comprising zirconium quinolate. Whether or not the prior art cites this layer as "superior" is not germane to a rejection under 35 USC 102. Additionally secondary considerations (i.e. unexpected results) are also not germane to a 35 USC 102. Appropriate methods of overcoming a prior art rejection under 35 USC 102 are given in MPEP 706.02(b).

Applicants also argue that Cok and Fukuyama et al. do not teach or suggest the recited features or the recited device performance characteristics in the pending claims, nor would those features or characteristics be inherent in devices. Applicants assert

that the references do not teach "wherein said device has the characteristics of a higher luminance efficiency measurable as cd A^{-1}, a greater luminance measurable as cd m^{-2} at 20 mA cm^{-2}, and a reduced turn-on voltage compared with a similar device in which said metal quinolate is aluminum quinolate" and that the Examiner has apparently simply ignored these claim recitations.

However Applicants presented no evidence to supporting the argument that the devices of Cok and Fukuyama et al. do not inherently meet these limitations. The Examiner has not ignored the limitations sited above and holds the position that both the devices of Cok and Fukuyama et al. inherently meet these claim limitations for the following reasons. It is clear from both the specification and applicants arguments that the claimed improvements over aluminum quinolate (Alq) are attributed to the metal quinolate, specifically zirconium quinolate. Therefore any device using zirconium quinolate would clearly inherently meet the present claim limitations relative to the identical device using Alq in place of zirconium quinolate. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. *In re Fritzgerald*, 205 USPQ 597, *In re Best*, 195 USPQ 430. Further the Examiner notes that the claim merely recites a "*similar* device in which said metal quinolate is aluminum quinolate" (emphasis added). This places no limitation on the similar device besides that it uses Alq. Clearly it is well within the skill in the art to create an inferior device (the Alq device) relative to another device (zirconium quinolate device) no matter how poorly the other device (zirconium quinolate device) may perform. In fact the claim does not even require the comparative device (Alq device) to

operate. Therefore it is clear that any device meeting the structural limitations of the claim will inherently meet the comparative limitations recited because a device will always have the characteristics of a higher luminance efficiency measurable as cd A^{-1}, a greater luminance measurable as cd m^{-2} at 20 mA cm^{-2}, and a reduced turn-on voltage compared with some unspecified *similar device* in which said metal quinolate is aluminum quinolate.

Applicants also argue that in para. 10 of the (previous) Office Action, the Examiner referenced col. 8, lines 30-49 of Cok to support the statement that this reference teaches "zirconium or hafnium quinolate as the host material .... " This statement Applicants argue is clearly incorrect because there is no mention in Cok of "hafnium quinolate" or any other hafnium compounds. The Examiner agrees that Cok does not disclose hafnium quinolate but notes that Cok explicitly discloses in the cited section zirconium quinolate.

Applicants also argue that it is true that Cok identifies "metal complexes of 8-hydroxyquinoline" as constituting "one class of useful host compounds capable of supporting electroluminescence" (col. 8, lines 30-32), but no preference whatsoever is expressed for this group of materials compared with other types of host compounds. Among a list of nine examples of such "metal complexes of 8-hydroxyquinoline," only one is a zirconium compound. However the courts have held that when the species is clearly named, the species claim is anticipated no matter how many other species are additionally named. *Ex parte A*, 17 USPQ2d 1716 (Bd. Pat. App. & Inter.1990) (The claimed compound was named in a reference which also disclosed 45 other

compounds. The Board held that the comprehensiveness of the listing did not negate the fact that the compound claimed was specifically taught. The Board compared the facts to the situation in which the compound was found in the Merck Index, saying that "the tenth edition of the Merck Index lists ten thousand compounds. In our view, each and every one of those compounds is described' as that term is used in 35 U.S.C. § 102(a), in that publication."). Id. at 1718. See also *In re Sivaramakrishnan*, 673 F.2d 1383, 213 USPQ 441 (CCPA 1982) (The claims were directed to polycarbonate containing cadmium laurate as an additive. The court upheld the Board's finding that a reference specifically naming cadmium laurate as an additive amongst a list of many suitable salts in polycarbonate resin anticipated the claims. The applicant had argued that cadmium laurate was only disclosed as representative of the salts and was expected to have the same properties as the other salts listed while, as shown in the application, cadmium laurate had unexpected properties. The court held that it did not matter that the salt was not disclosed as being preferred, the reference still anticipated the claims and because the claim was anticipated, the unexpected properties were immaterial.).

Applicants also argue that Fukuyama et al. can be interpreted as clearly teaching way by comparing example 5 and the use of a zirconium compound as the host material to examples 1 and 2. However these examples are not directly comparable, the devices have different emitting compounds and different electron transporting layer. Further the reference specifically teaches zirconium quinolate ([0010]-[0015]) as

superior ([0009] and [0010]) to Alq ([0006]-[0008]). Regardless, arguments of "teaching away" are not germane to a rejection under 35 USC 102.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571) 270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1786

MHW